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the astrogram

VOLUME XIV
NUMBER 19
June 8, 1972

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National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California

Kubokawa Receives Japanese Fellowship

The Japanese government recently awarded Charles C. Kubokawa, Man-Machine Integration, a seven-month fellowship which will enable him to conduct research at the National Aerospace Laboratory in Tokyo, the Japanese equivalent of NASA. Mr. Kubokawa will begin his research in the early fall.



CHARLES C. KUBOKAWA

The fellowship is awarded annually by the Japanese Science and Technology Agency for the promotion of international scientific cooperation to one specialist from each of six countries; Australia, France, Germany, Netherlands, United Kingdom, and the U.S.

Dr. Kenneth K. Yoshikawa of Ames' Physical Gas-Dynamics and Lasers Branch received the award in 1967.

Mr. Kubokawa hopes to, "do an in-depth survey of critical problems of the Japanese Airline pilots (e.g. aircraft operations, training, simulations) to identify problems and later determine whether these problems are universal or can be attributed to cultural differences."

During a recent interview Mr. Kubokawa explained the area he would like to study, "Human Factors, as a discipline, began during WWII, when psychologists were called in to solve many human error problems occurring in flying an aircraft. Controls and switches, for instance, would be placed to close together and would look alike although used for different functions. So, the pilot would often hit the wrong switch or use the wrong control in an emergency. Human Fac-

4.8 PERCENT RAISE

Income Increase For Retirees

The Civil Service Commission has announced that a 4.8 percent cost-of-living increase will become effective July 1 for retired Federal employees. This increase will be reflected in annuity checks mailed August 1. Federal employees who retire on or before June 30, 1972 will also receive the 4.8 percent cost-of-living annuity increase. The Civil Service Commission emphasized that, to receive the increase, the retiring employee must not be in a pay status after June 30, 1972.

Employees who have further questions or interest concerning this announcement should contact Betty Thomsen, Ext. 5610.

tors came about then, to make the two (man and machine) work in concert rather than in conflict with each other.

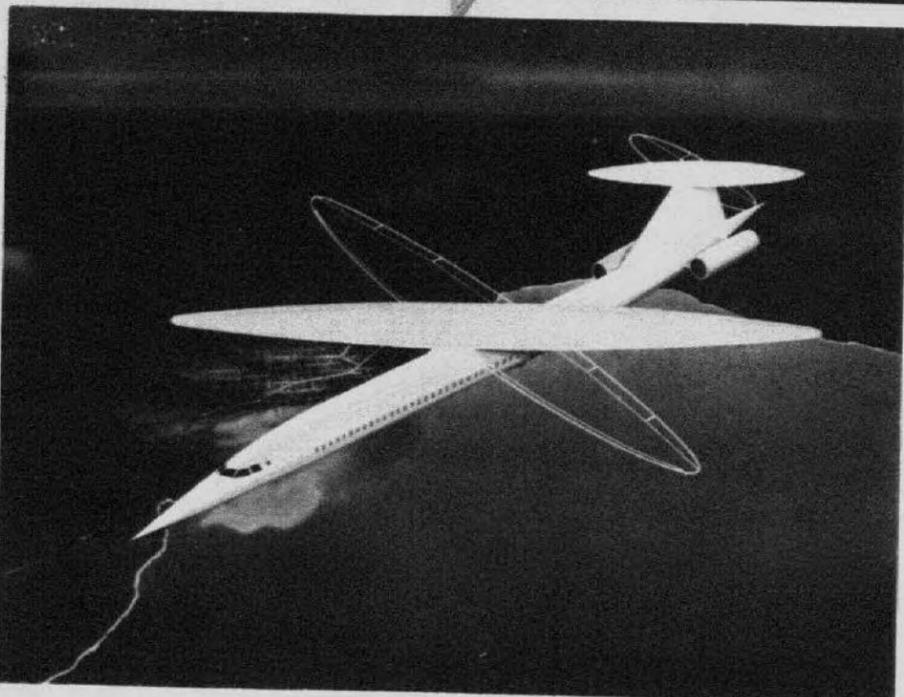
"Today, the U.S. sells many of their aircraft to Japan. I would like to find out if the Eastern man has problems with our plane's instrumentation, for example, because they are accustomed to reading in a different way, and may thereby have different scan patterns."

If there is not enough time to conduct this study he intends to conduct a survey of human factors research in Japan and, "perhaps arrange an exchange program that could benefit both countries in this area."

Visiting Japan has been a long-time ambition of Mr. Kubokawa. When he joined the Air Force in 1951, he asked to be sent to the Far East.

He felt assured that his request would be approved since he speaks fluent Japanese and his surname is Oriental. However, due to the usual bureaucratic confusion, Mr. Kubokawa was sent to Maine. The base at which he was sent was located farther east than any other Air Force Base in the Continental U.S.

Mr. Kubokawa will be joined by his wife, Beth, and their three daughters, Lori, Lisa and Keri in Japan.



New Wing Concept by Ames Scientist

A radical change in the basic geometry of an aircraft wing might according to preliminary NASA theoretical and test predictions, allow future jet transports to operate quietly and efficiently at both take-off and supersonic speeds.

Dr. R.T. Jones, a senior staff scientist at Ames, is suggesting that an anti-symmetrical wing, pivoting on its center point, may be the way to achieve supersonic transport capability without the penalties of high fuel consumption and noise associated with conventional SST aircraft in production.

"Man has an instinctive feeling for bilateral symmetry," Dr. Jones remarks, "which is no doubt derived from wing naturally evolved birds and animals. It is natural for us to mold the shape of a supersonic aircraft to suit this instinctive feeling. However, nature does not provide us with a guide for supersonic flight; there are no supersonic birds."

"It is interesting, and probably important, that mathematical theory indicates a completely different kind of symmetry for supersonic aircraft."

Dr. Jones is credited with the development in 1945 of swept-wing theories which were instrumental in advancing aircraft speeds into the transonic and supersonic ranges. Most jet transports now in use are based on his aerodynamic theories and his work with slender delta wings.

The new design would appear to

have a conventional straight wing at right angles to the fuselage during take-off on medium length runways such as the Washington National Airport. An aircraft in this configuration would require only about one-fourth the take-off energy now needed by comparable delta wing jet transports with similar payloads.

As the conceptual aircraft reaches the speed and altitude where swept wings would be efficient, the entire wing would rotate about 45 degrees so the wing on one side would point more in the direction of flight and the other half would trail toward the rear.

Studies indicate that cruising in this configuration at supersonic speeds up to about Mach 1.2 would not produce a sonic boom on the ground and could be accomplished with nearly the same fuel economy per passenger mile as current jet aircraft at subsonic speeds. Over ocean areas where sonic effects are not detrimental, the conceptual aircraft could cruise up to Mach 1.5.

If current testing, computational prediction and further research verified the promise of the new design, the antisymmetrical wing concept would open the door to development of a more commercially efficient, ecologically acceptable jet transport for the nation's future needs. Ames is continuing theoretical computer studies and wind tunnel studies using models "flown" at speeds up to Mach 1.4.



TECHNICAL LEADERSHIP . . . in accomplishing a series of simulations of Augmentor Flight Test Vehicles (AWFTW) on the Ames Flight Simulator for Advanced Aircraft, has resulted in a NASA Special Achievement Award for William B. Cleveland (left), Simulator Computer Systems Branch. Working with the Sigma 7 and Sigma 8 computers Mr. Cleveland's was the final simulation to run on these new systems. Although difficulties were encountered, he was able to make necessary alterations and achieved a simulation that has been enthusiastically accepted by highly exacting test pilots. George A. Rathert, Jr. (right), Chief of the Simulation Sciences Division, presented an award check and letter of congratulations from Dr. Hans Mark, Ames Director, to Mr. Cleveland at a ceremony attended by his branch chief, Robert M. Barnett (center).

"Thank You" from Skylab - Home Bond Drive Chairman In Earth Orbit

"A great amount of effort was put forth by several Ames employees during the recent U.S. Savings Bond Drive. As Drive Chairman I would like to express my appreciation for the time and enthusiasm spent by the Division Captains and their canvassers throughout the campaign.

"Of particular help to me was Robert A. Cooper, Financial Systems and Analysis, who assisted in all aspects of the campaign, and Miss Barbara F. Busch, Public Affairs, who directed outside publicity.

Donald B. Kornreich"

"Thank You" Note

"Dear Friends,

I had a wonderful time at my retirement gathering. Thanks to all of you who came, making it such a happy occasion.

My Branch worked hard, I appreciate the time, effort, most of all the thought.

Thank you each and everyone for your gift contribution, the lovely stole is "my only" and the check will make that dream sewing machine cabinet really come true.

Most Sincerely,
Bea Aikman"

Skylab, planned for launch in the spring of 1973, will be a homey little place compared to previous spacecraft.

There will be 13,000 cubic feet of area in which to move and work. And, privacy will be possible.

Instead of the bland diet of previous missions, Skylab occupants will dine from 2,000 pounds of food, stored in 11 food storage containers and five food freezers. No fine china or crystal will be provided, but metal cans with pull-off tops will offer a mixture of frozen, dehydrated and dry foods that may be heated or chilled within the crew quarters.

For drinking, food preparation, showers and other needs, 6,000 lbs. of water will be stored in 10 tanks.

Clothing will not be washed on Skylab. So, when a crewman changes he will dispose of the used garments by placing them in a "trash can," an empty tank beneath the floor of his living quarters.

The garments, sized for individual astronauts, will be stowed in specially marked lockers. There will be 60 changes of jackets, shirts and trousers. Thirty constant-wear garments, 15 pairs of boots and gloves, and 210 pairs of shorts are among the clothing inventory.

For the first time, astronauts will also share a bathroom stocked with 55 bars of soap and 210 pounds of towels.

They will also have on hand 156 rolls of teleprinter paper, 104 film magazines, a medical kit, and 105 pens and pencils, and a vacuum cleaner.

Three three-man crews will be launched aboard Apollo/Saturn IB vehicles to Skylab, about 90 days apart. The first Skylab mission is planned to last 28 days, the remaining two not more than 56 days each.

Although Skylab is some 50 times greater in volume than Apollo, experts at Marshall Space Flight Center have a strict plan for providing and stowing the more than 13,000 individual items needed for the long duration mission.

Two from Ames on CAEA Board

Mike Donahoe, Educational Programs Officer, and Barbara Busch, Educational Specialist, both of the Ames Public Affairs Office, were elected to the Board of Directors of the California Aerospace Education Association for the organization's 1972-73 year.

The organization is composed of members from a wide variety of aerospace-related fields including various colleges and high schools which teach aerospace as a part of their curricula, the aircraft industry, Civil Air Patrol, The 99's (women pilots), the State Department of Aeronautics, FAA and NASA. The goal is to improve the teaching of aerospace, including aviation and space exploration, to the school systems of California.

Serving as President for the 1972 and 73 year will be Earl Connolley, a teacher at Aragon High School, San Mateo. All members serve on the CAEA in a voluntary capacity. Individuals interested in further information about the CAEA may contact Mr. Connolley in care of his high school, or either Mr. Donahoe, ext. 5544 or Miss Busch, ext. 5091.



"CAN DO" . . . Mrs. Germaine W. Lord (pictured above), an Illustrator with the U.S. Army Air Mobility Research and Development Laboratory in Ames' Graphics and Exhibits Branch, was recently commended for her "exceptional performance" during the past year. S.A. Augustine (above), of the Army Laboratory presented the Certificate of Achievement during a recent ceremony.

The certificate reads, in part, "Without exception, Mrs. Lord accomplished this workload with a cheerful 'can do' attitude, outstanding professional expertise, and complete devotion to duty which was instrumental in more than satisfying the requirements of the tasks imposed upon her."

astrogram Room 134
Admin. Mgt. Building
Phone 965-5422

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Editor Dorothy M. Evans
Editorial Assistant Jeanne Richardson
Reporters NASA Employees

Deadline for contributions:
Thursday between publication dates

Essay Contest Open to All

The National Space Club is sponsoring the Robert H. Goddard Historical Essay Award competition for 1972. This annual nationwide competition, open to any U.S. citizen, offers a \$500 prize and the Goddard Historical Essay Trophy.

Essays may treat any significant aspects of the historical development of rocketry and astronautics and will be judged on originality and scholarship. They may bring new information to light or cast a new and different light upon events or individuals influencing rocketry and astronautics in the United States.

Entries should be submitted by November 1, 1972, to the Goddard Historical Essay Contest, c/o National Space Club, 1629 K Street N.W., Washington, D.C. 20006.

Essays should not exceed 5,000 words and should be fully documented. For rules of the contest call Code AAH (ext. 53612) or the National Space Club (296-4690).

GOLF

... by Kay Bruck

May 17 was the date for the Ames Golf Club retirement luncheon for two of its staunchest supporters and ex-presidents, Ed Courtney and John Mulkern. The Lookout Inn, Sunnyvale Golf Course (where else to have a golfing retirement party?) was the place chosen to bid our fond adieus and present them each with an appropriately designed golfer's tray (for the 19th hole, of course).

Each of them sent a special note of thanks for the nice party. Ed Courtney said, "Thank you to all members of the Ames Golf Club for my retirement luncheon and gift. It will be a pleasant reminder of past games and memorable friends."

John Mulkern's note reads: "I want to express my thanks to the members of the Ames Golf Club for the lunch and gift presented to me on the occasion of my retirement. I will cherish the association with the Ames Golfers and depart with fond memories of many happy days spent with this fine group of friends. In leaving, I wish each member the best of health, success, and many more years of pleasurable golfing."

I know I speak for all our golf members when I say "Many happy and healthy years of retirement to both of you and to your wives."

The July tournament will be at Sunol (Palm Course). Watch for announcement.

"Page from the Past" 1940 - 1955



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"Ames Airings"

... by Jeanne Richardson

ARCHES OF TRIUMPH

Ames was well represented in the "Greatest Foot Race of All," the recent Bay-to-Breakers in San Francisco. Five Ames joggers started the 7.8 mile run, and five finished; a blistering feat.

JERRY P. BARRACK, STOL Research Aircraft Office; VITO A. D'ALIOIA, Experimental Fluid Dynamics Branch; ARTHUR MANDRELL, Cost Analysis and Special Projects; GEORGE T. LENEHAN, Chief Counsel's Office; and DALE I. SHUTE, Model and Instrument Machining, hoofed across the finish line in that order.

The winner among the Ames athletes, Jerry, improved by one place over last year, to be the 290th finisher. Which is nothing to wheeze at, considering there was 1952 people at his heels. Vito was a short six slots behind Jerry at the end.

Jerry said, "By the end of the race I didn't feel that good, but it was fun. He thought the race, overall, was a "fantastic thrill and a great spectacle."

Jerry's time, by the way, was 48 minutes, just 12 minutes behind the winner.

THEY GO UP, DIDDLE LEE UP UP

In the little town of Taft, Calif. (near Bakersfield) four Ames men spent three days of grueling glider competition. By the end of the contests they had sustained two casualties, and one had received a coveted trophy.

A plane, built by LARRY W. PEZZOLO, Equipment Branch, was destroyed by a vicious "Dust Devil" (a strong whirlwind in layman's terms) and another, built by WILLIAM H. VANDERBEEK, Metals Fabrication, simply glided out of sight, never again to be seen.

Larry was compensated for his loss later, when he won the A-1 Towline Competition. His glider flew longer than any other in that category. He said it had taken him about 40 hours to build the winning craft.

FRANK W. STEINLE, JR., Experimental Investigations, and GEORGE XENAKIS, saw it all. Although they didn't enter the contests, they took part along with approximately 400 others as on-the-spot witnesses.

A MATE CREATES

MIDGE FIRPO's husband, Gene, won another first place ribbon for one of his paintings. Entitled Sunset, the mixed-media landscape was chosen over 100 other entries in the non-representational category of the

Sequoia Art and Flower Show. And Midge, who works in the Resources Management Office, is proud of Gene, with good reason.

BOWLING

As another Thursday night bowling league season draws to a close, the first place winners are: Don's Demons -- Gil and Helen Morehouse; Dave and Carolyn Sharpe, and Don Boxwell. After a very close roll-off with the Mad Teaparty. Would you believe 18 pins?

The league wishes to thank the officers of this past season: Bob Zeisser, Gil Morehouse, Cathy Byrne, and Don Boxwell for their fine efforts. The newly elected officers for the 1972-73 season are: John Luciani, President; Don Cifone, Vice President; Charlie Mid-daugh, Secretary; and Harry Spencer as Treasurer -- lots of luck and let's keep this a fun league.

We hope to see all those familiar faces and many new ones in the fall for the 1972-73 Thursday night Ames Mixed Fives Bowling League season.

SKI CLUB

The Ames Ski Club is offering memberships for the low price of \$1 again. Moving into it's third wonderful year, the club offers a lot for so little.

For instance, where else will you receive free affiliation with the Matson Ski Club, for the low, low price of joining the Ames Ski Club. The Matson affiliation allows you, after six months, to participate individually in their charter flights to Aspen and Sun Valley. And, the Ames membership allows you to go to the monthly meetings and join the frequent local ski trips. Also, an Ames trip to Aspen or Vail is planned for next year.

So, renew your membership or join the ski club now and avoid later disappointments. Just fill out the application below and send it to 241-11, with your remittance.

MAIL TO: Ames Ski Club - 241-11

APPLICATION FOR MEMBERSHIP AMES SKI CLUB 1972/1973 SEASON

NAME _____

OTHERS IN FAMILY* _____

ORGANIZATION _____ MAIL STOP _____

PHONE _____

Enclosed - \$1.00

*CAB rules require all family names be identified in membership list.

Credit Union

The Moffett Field Employees' Credit Union has scored impressive gains during the period ending April 30, according to Fred G. Mayer, credit union manager.

Loans and shares outstanding scored new highs as assets passed the 4 million dollar mark. As the membership approaches 7,000 with 4,300 loan accounts and increased member awareness, the Credit Union looks forward to reaching \$5 million in assets by the end of the year.

Recent changes in the Loan Policy of the credit union appear to be providing additional stimuli to an already busy organization.

For Sale-Six-year crib and mattress. Like new, \$18. Call 493-6462.

For Sale-Tent trailer camper compact fold out type. Sleeps two adults, equipped with spare tire, wheel, lights, 72 lic., two trailer tongues, one custom for pick up truck bumper height, one standard. \$150, see to appreciate, call Bob Zeiger, 266-2908.

For Sale-Hotpoint Double Oven and separate range. Electric built-in type. Avocado, new never used. \$295. Call 797-7414.

For Sale-Old Hotpoint, built in dishwasher, rebuilt pump and motor, runs fine, excellent for parts or vacation home. \$30. Dick Wood, 326-6951.

For Sale-One 5 gal. and two 10 gallon tropical fish aquariums, practically new, sold separately or together, Dick Wood, 326-6951.

For Sale-Motorcycle, 1970 Honda, CL-100, excellent cond., 4000 miles. \$275. Phone 374-2369.

For Sale-8ft. redwood picnic table and benches, only \$17.50. Sunbeam party grill, never used \$10. Turkey platter, very large, hand painted and imported from Italy, \$12.50. 736-6999.

For Sale-Noritake China, service for twelve, 7 pc. place settings, 91 pcs. total, delicate floral pattern, \$100. H. Asch, 736-6999.

For Sale-Queen-size Serta Perfect Sleeper Imperial (top of the line), walnut headboard, heavy duty frame, 2 sets permanent press linen, blanket, like new, \$200. Walnut finish wall unit, ideal for living or dining room, lots of storage space and glass front units for china or knick-knacks, \$100. 736-6999.

WANT ADS

Advertising of articles or services in this publication is restricted to employees of Ames Research Center and on-site employees of support contractors. Articles or services advertised herein must be offered for sale or rental as advertised, without regard to race, color, religion, sex or national origin.

The Astrogram's ad section is provided as a personal, non-commercial service to Ames employees. Advertiser must be identified by name, extension and organization. The name may be left out of the ad but is needed for records. Ads must be submitted in writing to The Astrogram, N 241-4 by Thursday, a week before publication. The advertiser's home telephone number must be provided as a point of contact except in carpool notices.

AUTOMOBILES

For Sale-1964 Cad coupe deval, extra clean, new tires, \$950. 356-9695. Brooks.

For Sale-1971 Porsche, 911-T, Metallic silver, sun-roof, AM FM radio, alloy wheels, phone 297-5965.

For Sale-1970 M.G. Midget convertible. Wire wheels, Michelin tires. 14, 800 miles. \$1800. Phone 257-0483.

For Sale-Olds Cutlass F-85, 2-dr. Smallest V8. Radio and heater. Automatic. Good mechanical cond. Needs paint. Good commuter car. Original owner. \$175. Call 328-0787.

Take Over-1970 Toyota Corona, 4-door stick shift. Call 243-9012.

For Sale-Mercury Montego mx '69 white, V8, 2-door hard top, power B (disc) and S, automatic, air cond., radio. New tires, plugs and ht. leads. All service records available. Excellent condition throughout. 45,000 m. \$1595. Research Associate must sell leaving mid-June. 854-6657.

For Sale-1965 Mustang, V8, auto transmission, 98,000 miles, excellent cond. \$600. Call 321-2380 evenings or weekends.

For Sale-1961 Corvair Monza, rebuilt with painstaking care, 1963 spyder engine, 4-speed trans. White and trim looking. Asking \$375. Tel. 736-7154.

For Sale-1970 Dodge Challenger Special edition, R/T air, pwr steering and brakes, vinyl roof plus many more factory options. Less than 20,000 miles. 5/50 warranty. \$2395./offer. Phone 797-7414.

For Sale-1969 Buick Riviera GS. All the luxuries including air and am-fm stereo. 66,000 miles. Reduced price \$2995./offer. Phone 797-7414.

HOUSING

For Sale-Bradford Square in Sunnyvale. Five bedrooms. Two story. Family room with used-brick fireplace, utility room. All-electric built-ins. Two and a half baths. Upgraded shag wall-to-wall carpet. Completely landscaped. Professionally-done patio. Sodded lawn and sprinklers front and rear. Only a block and a half to Ponderosa school and park, \$44,950. Call 246-7748.

For Sale-40 acre parcel off Skyline. 45 minute drive from Palo Alto. Redwoods, year-round creek and spring. \$36,000. Call 948-2987 evenings.

Rental-So. Lake Tahoe, 3-bedrooms. A/EK, deck, close to casinos, available Aug. 19-26, only. \$100 call 252-4749.

MISCELLANEOUS

For Sale-20ft. cabin cruiser outboard 80 hp. with trailer. E. Morris, ph. 326-9427.

For Sale-Membership in American Sportsmen club, private hunting, fishing, camping, etc. in Calif. and the western states. Below current annual dues rates. Call after 5 p.m., 738-3689.

For Sale-Trailer, fold up type, sleeps four, Butane stove and light, ice box, lots of storage space \$600. Marnell Smith, 258-2752.

For Sale-Afghan puppies, AKC, registered, champion sired, parents both x-rayed and free of hip disease, quality puppies at favorable price. 739-6054.

For Sale-Hammond chord organ, Beautiful walnut cabinet. Just returned, \$300. Sheet music included. Maximum enjoyment with minimum investment. 248-5546.

For Sale-Car cooler, used only twice, cost \$35. Will sell for \$19. 323-7070.

For Sale-Two 7.75 x 14 snow tires mounted on Ford Fairlane wagon wheels, \$15. 493-6462.

For Sale-3-burner Coleman camp stove \$15. 323-7070.

For Sale-Intercontinental radio, 17 transistors, 5 bands, AFC, BFC, many other features, Little used, \$60 (new one costs over \$100). Tap shoe size 6, like new \$6. Call 321-1858.

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the astrogram

VOLUME XIV
NUMBER 20
June 22, 1972

National Aeronautics and Space Administration • Ames Research Center, Moffett Field, California

M-2 Flying Again

The NASA M-2 lifting body returned to flying status last week to evaluate new flight controls called "rate command augmentation system."

The rate command augmentation system is a type of electronic fly-by-wire system which employs an analog computer and as side-arm controller in addition to the conventional center stick.

The new control system provides automatic stabilization that will maintain the aircraft in smooth, stable flight during turbulent air conditions and provide superior handling qualities in the vehicle.

The M-2 lifting body designed at Ames, is a small wingless craft that is air-launched from a B-52 mothership. The M-2 then uses its own rocket engine to climb to higher speeds and altitudes. After rocket engine shut-down and the research craft reaches peak altitude, the pilot maneuvers the M-2 to the desired

Bond Drive Results

Ames' 1972 U.S. Savings Bond Drive ended with the Center's percentage of participation increased to 59.8. Fifty-two employees increased the amount of their allotments, and 37 employees subscribed to the Payroll Savings Plan.

landing area.

William H. Dana, a civilian research pilot for NASA's Flight Research Center, is the M-2 project pilot.

The NASA M-2 lifting body returned to flight status following six months of planned maintenance and modification at FRC.

The M-2 is one of three lifting bodies under test in a joint NASA-USAF research effort. It is the only one currently on active flight status. The Air Force's X-24A is being extensively modified and will be flown in about one year. It will be redesignated the X-24B.

Richard Petersen to Participate in Stanford-Sloan Fellowship Program

Richard H. Petersen has been selected to participate in the 1972-73 Stanford-Sloan Fellowship Program. He is Chief of the Aeronautical Missions and Technology Branch, OAST Advanced Concepts and Missions Division.



RICHARD PETERSEN

The Sloan Program is a nine-month course of study in advanced management and the humanities designed for the professional and personal development of exceptional young executives who have demonstrated the potential for senior management. Mr. Petersen is the sixth nominee from Ames to be named to attend this program.

"I'm interested in studying airline management and economics," Petersen said during a recent interview. The Sloan Fellows divide their time between classroom study, directed reading, seminars, field trips and research.

The research experience is individually designed so that each Fellow will undertake an individual project of some depth. This project is designed to facilitate the transfer of what the participant has learned from the campus environment to the organization to which he will return.

Speaking of his work at Ames, Petersen said, "Our purpose here is to study future aircraft, to give direction to NASA research, and to determine how valuable future aircraft may be and to whom." His branch is also responsible for

assessing the economic and social implications of future civil aviation systems.

"I'm particularly interested in how NASA's technology may affect commercial aircraft; and the management and economics of commercial airlines. I've done some research in this area already, and it's fascinating."

The major portion of the Sloan Program is devoted to classroom seminars. The seminars are led by eminent scholars from various schools and departments throughout Stanford University. To balance business theory with business practice the Sloan Program includes various field trips to meet with top business and government leaders as a part of the regular program.

"I'm really looking forward to this school year," Petersen said. "It will be different than my prior academic work." He graduated with Highest Distinction from Purdue University in 1956, and received a Master of Science degree in Aeronautics from California Institute of Technology in 1957.

Later that year, as a Lieutenant with the U.S. Air Force, he came to Ames as a Research Engineer. His career at the Center has included; supervision of the calibration of the 3.5 Foot Hypersonic Wind Tunnel facility; analyses of military aircraft systems and many aspects of civil aviation systems, including general aviation, advanced STOL and VTOL transportation systems, and future long-haul aircraft.

He was assigned to the Programs and Resources Division at NASA Headquarters in Washington for one year in 1965. His work with the Program Analysis Group there prompted a letter of commendation from the Acting Director of the Division which reads in part; "... Dick was responsible for coordination and analysis of the entire Aeronautics research and technology program. His analyses of that program and the corresponding Congressional and Bureau of the Budget presentation materials were extremely valuable to this division

(Continued on Page 3)



T.U. CONTRIBUTION WINS TOP AWARD . . . The largest monetary award ever paid by NASA for a technology utilization contribution was presented recently by Dr. Hans Mark (center), Ames Director, to (l to r) William D. Gunter, Jr. and George R. Grant of the Electronic Instrument Development Branch. The two research scientists shared a \$6000 award for a Tech Brief which outlined a new method they devised for detecting very weak light signals by increasing the effective sensitivity of a photomultiplier (light detection tube) using an optical enhancement device. The latter is a series of prisms which can be attached easily to the photomultiplier. The basic principle of the device is to save light by figuratively scooping it up and pushing it back through the light detection tube until as much light as possible is expended in generating electrical signals. Dr. Mark is pictured here as he examined the optical enhancement device, while the photomultiplier tube is held by Mr. Grant.

Record Number of Ames Employees Receive Invention and TU Awards

A record number of Ames researchers were presented with Invention and Tech Brief awards by the Director, Dr. Hans Mark, during a recent ceremony.

Twenty-one members of the staff shared \$3050 for two Tech Briefs submitted under the Technology Utilization program, and eleven patents. The creative efforts of the innovators were reviewed and approved for the awards by the NASA Inventions and Contributions Board.

A \$600 Tech Brief award, the largest ever authorized by NASA, was received by George R. Grant and William D. Gunter, Jr., of the Electronic Instrument Development Branch. Their research in the area of optical enhancement techniques has been published in a Tech Brief entitled "Optical Enhancement of Photocathode Devices."

The second Tech Brief award, \$150, was presented to Raymond S. Lim, Simulator Computer Systems Branch, for his work which is outlined in the Tech Brief entitled "Rapid Method for Interconversion of Binary and Decimal Numbers." The paper outlines in detail a practical implementation for binary and decimal conversions by using integrated circuit ROM (read only memories) for modular implementation.

Thomas M. Walsh, Avionics Research Branch, received the top invention award of \$500 for an "Interferometric Rotation Sensor" which relates generally to direction and rotation sensing apparatus and, more particularly, to novel interferometric prisms and associated control systems for precisely determining the direction to a remote light source.

A close second to the top invention award was \$400 presented to Wayne O. Handland, Research Equipment Engineering Branch, for a "Two-Degree Inverted Flexure" which is useful for various purposes such as positioning magnetometers, lasers and telescopes and for mounting models in wind tunnels.

Individual awards were also presented to Arthur L. Morris, Large-Scale Aerodynamics Branch; Robert L. McKenzie, Physical Gas-Dynamics and Lasers Branch; and Vard B. Holland, Electro-Systems Engineering Branch. Mr. Morris was awarded \$200 for a "Brake for a Rollable Platform" which consists of a simple lever actuated pad adapted to hold a movable platform on level or irregular surfaces and independent of the wheels, locking

in place even on surfaces which extend above or below the wheel level.

The McKenzie invention concerns new and useful improvements in a "Diatomic Infrared Gasdynamic Laser" and was awarded \$150. The principle involved with the gasdynamic laser is the use of infrared vibration-rotation transitions of a diatomic gas such as carbon monoxide.

An invention relating generally to electronic signal handling apparatus and more particularly to a novel signal conditioning circuit having independent gain and offset characteristics and requiring but a single operational amplifier was awarded \$50 for the inventor, Vard B. Holland, Electro-Systems Engineering Branch.

Co-inventors John Dimeff, Assistant Director - Advanced Instrumentation, and James W. Lane, Avionics Branch, shared \$200 for a "Wide Range Dynamic Pressure Sensor." The device is capable of measuring from extremely low to extremely high pressures and lends itself for use in a planetary probe, particularly for a dense gaseous atmosphere such as would be encountered on Venus.

Two-hundred dollars was also shared by Henry A. Leon, Experimental Physiology Branch, James P. Connolly, Electro-Systems Engineering Branch, Maurice J. Hitchman, Electronic Instrument Development Branch, and John E. Humbert, Computer Systems Branch for an "Automatic Real-Time Pair-Feeding System for Animals" which allows an experimental animal to feed at liberty while the same amount of food is delivered to a control animal. Pair-feeding is a relatively new biological technique.

A novel injection system for a gas chromatograph invented by Glenn E. Pollock, Life Detection Systems Branch, Milton E. Henderson, Model and Instrument Machining Branch, and Ralph W. Donaldson, Electronic Instrument Development Branch, received an award of \$150 for the three inventors.

Continuing in the shared award area, \$150 went to Dr. Richard F. Haines, Human Performance Branch, James W. Fitzgerald (now retired) and Salvatore A. Rositano, Electro-Systems Engineering Branch, for a "Visual Examination Apparatus" which relates to an automated visual sensitivity tester for examining the eyes of a human being to determine visual



INVENTION AND TECH BRIEF AWARDS . . . approved by the NASA Inventions and Contributions Board, were presented recently by the Ames Director, Dr. Hans Mark (far right, back row) to this group of Ames researchers pictured above and below. Front row (l to r) James P. Connolly, Maurice J. Hitchman, James W. Lane, Raymond S. Lim, and Henry A. Leon. Back row (l to r) Robert L. McKenzie, Ronald J. Hruby, Wayne O. Hadland, Arthur L. Morris, and John Dimeff.

Shown below are (front row (l to r) Salvatore A. Rositano, John E. Humbert, Richard M. Brown, Richard F. Haines, and Glenn E. Pollock. Back row (l to r) William D. Gunter, Jr., Thomas M. Walsh, Milton A. Henderson, George R. Grant, Vard B. Holland, and Ralph W. Donaldson, Jr. was an award recipient not present for the ceremony.



field sensitivity and blind spot size, shape, and position.

A two-time winner at the presentation ceremony was William D. Gunter, Jr., who not only was a Tech Brief Award recipient, but is co-inventor with Richard M. Brown, Electronic Instrument Development Branch, of an "Optical Imaging System." The system which was awarded \$150 increases the efficiency of absorption of light or other radiant energy at the light sensitive face of an imaging detector.

Ronald J. Hruby of the Avionics Branch and two Lockheed employees, Steven B. Cross and William R. Dunn, were co-inventors of

a "Coaxial Inverted Geometry Transistor Having a Buried Emitter." The transistor structure is particularly suited for use in applications where only a low actuating voltage is available. The invention award was \$150.

Room 134
Admin. Mgt. Building
Phone 965-5422

THE ASTROGRAM

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Thursday between publication dates

ASEE-NASA Summer Institute

Ames will take part again this year in the ASEE-NASA Summer Faculty Institute - 1972 Aerospace Technology Seminar. The seminar, which begins Thursday, June 29, will be held in the Skilling Building, Room 080 at Stanford University.

All members of the Stanford Community and Ames employees may participate in the seminar which begins Thursday, June 29, will be held in the Skilling Building, Room 080 at Stanford University.

Below is the seminar schedule:

- June 29 **William P. Jones**, Research Scientist, Ames Research Center
"ILLIAC IV, The Fastest Computer—Prospects and Applications"
- July 6 **Bernard M. Oliver**, Vice-President for Research and Development, Hewlett-Packard Company
"Detecting Extraterrestrial Intelligent Life"
- July 13 **Nicholas J. Hoff**, Professor (Emeritus) of Aeronautics and Astronautics, Stanford University
"Who Invented the Airplane"
- July 20 **Lester Lees**, Professor and Director, Environmental Quality Laboratory, California Institute of Technology
"Energy and the Environment"
- July 27 **Edward Teller**, University Professor, University of California, and Associate Director, Lawrence Livermore Laboratory
"Progress in Controlled Thermonuclear Fusion Research"
- August 3 **Arthur L. Schawlow**, Professor of Physics, Stanford University
"Lasers—Present and Future"
- August 10 **Richard H. Jahns**, Dean, School of Earth Sciences, Stanford University
"California Earthquakes and the Frustrations of Intermittent Instruction"

SLOAN FELLOWSHIP

(Continued from Page 1)
as well as the Aeronautics Division itself."

In 1967 he received a Sustained Superior Performance Award for his "exceptionally high quality" of work.

He participated in the new Technology Opportunities program in Washington from August, 1971 through January of this year. Mr. William M. Magruder, Special Consultant to the President, commended Mr. Peterson for his work in a letter.

The letter reads, in part; "On behalf of the President, I wish to express his appreciation for your participation in the new Technology Opportunities project. Your efforts have provided the Executive Office with a far deeper insight into the challenge of the application of technology to our national objectives than we have ever had before."

As Chief of the Aeronautical Mis-

Von Braun Retires

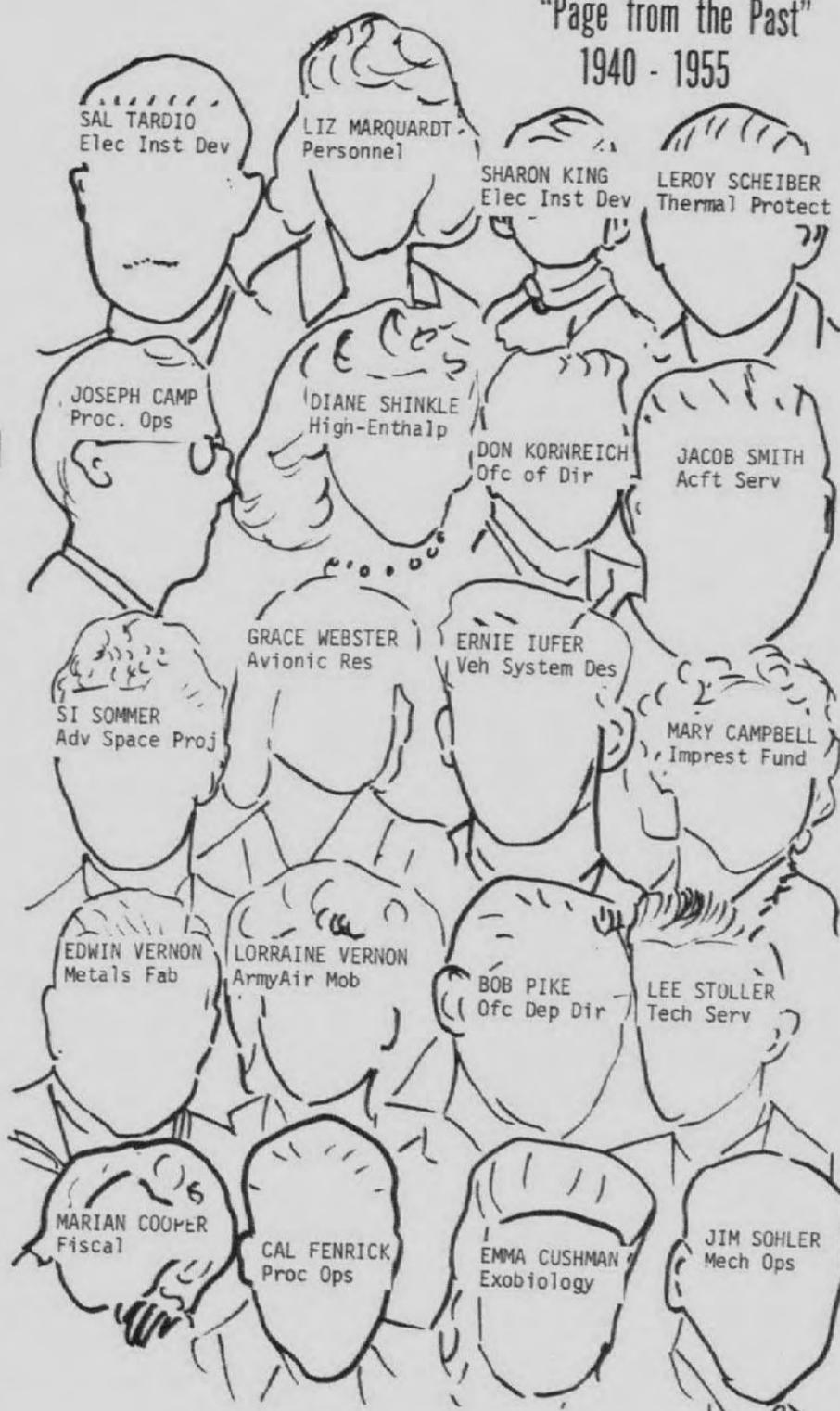
Dr. Werhner von Braun, Deputy Associate Administrator has retired from NASA to join Fairchild Industries as Corporate Vice-President for Engineering and Development. The move is effective July 1.

Commenting on Dr. von Braun's decision, Dr. James C. Fletcher, NASA Administrator said:

"All of us in NASA will miss the daily stimulation of his presence, but we will continue to have the benefit of his inspiration and counsel in the continuing exploration and use of space."

sions and Technology Branch he is presently responsible for its systems analyses and studies, and for providing assistance to OAST in defining and planning the NASA aeronautical research program.

"Page from the Past"
1940 - 1955



Satellite May Have Crashed Into Moon

The particles and fields subsatellite placed in lunar orbit by the Apollo 16 astronauts has apparently crashed into the lunar surface after completing 425 revolutions of the Moon.

Radio contact with the 90-pound subsatellite was not re-established when it should have reappeared on the front-side of the Moon on its 426th revolution.

The last tracking data, from the 416th revolution, showed the subsatellite in an orbit which brought it to within 2.3 nautical miles at a point on the back-side of the Moon located at 10.16 degrees north latitude and 111.94 degrees east longitude.

The subsatellite is believed to have hit the Moon near its last known perilune (low point of orbit) at about 5 p.m. CST, May 29.

The subsatellite, containing three scientific experiments, was ejected from the scientific instrument module bay of the Apollo 16 command and service module April 24 before the astronauts fired their spacecraft main engine to take them out of lunar orbit.

Doiguchi Attends Stanford Program

Shizuo Doiguchi, Chief of the research Equipment Engineering Branch, has been accepted for participation in the twenty-first annual Stanford Executive Program which began Monday, June 18, and continues through August 10.

The eight-week Program of intensive individual study and group discussions is designed primarily for men in senior management positions. One of the main objectives is the advancement of professionalism in management.

Each year the Program attracts a broad spectrum of executives from throughout the world who range in age from thirty-five to fifty years. At the end of the Program participants are awarded certificates of completion and become alumni of the Stanford Business School.

Mr. Doiguchi has been a member of the Ames staff since 1949. For the past fifteen years he has been assistant chief and then chief of the RFEE Branch. He was graduated from UC Berkeley with a B.S. degree in mechanical engineering and earned an M.S. degree from Stanford.

Revised Purchase Request Form

The "Purchase Request/Purchase Order" form ARC 31 has been revised as of February, 1972. Please destroy all previous editions and order the revised edition from stock.

Your Political Rights As A Federal Employee

The U.S. Civil Service Commission has prepared a pamphlet on the political activity of Federal employees. The publication outlines what employees may or may not do with regard to political activities, the penalties for violation, exemptions, and voting rights. To obtain a copy of the pamphlet call Ames ext. 5619.

Brochures Available

Copies of a brochure entitled "Space Benefits - Safety" are available, by written request, from the Audio-Visual Facility, c/o Public Affairs Office, Mail Stop 201-6. Indicate the number requested and give name and mail stop.

Copies of three other publications, "Space Benefits, Today and Tomorrow;" "Space Shuttle;" and "Skylab" are still available and may be obtained upon written request.

Quick Copy Service Is Improved Again

The Quick Copy Service was established to:

- Reduce copying costs at the Center.
- Reduce time spent by Ames employees reproducing their own work.
- Provide an essential service for all.

The service has improved greatly in the past year and further improvements have recently been made in our facilities. In most cases the turnaround time will be 24 hours or less. We urge all employees to utilize this service whenever practical and ask that the following limitations be observed:

1. Maximum paper size is 8 1/2" x 14".
2. Maximum number of copies is 20 of any number of originals. (Exception to this limitation requires justification)
3. No requests that infringe upon copyright or other copying regulations will be accepted.
4. Contractor requests must be approved by the appropriate technical monitor.

To place an order, prepare in duplicate a Quick Copy Work Order (ARC 388) and submit it with the work to be copied in a Quick Copy Service envelope (ARC 427) through the regular internal mail system.

GOLF

The Pajaro Tournament held June 3 was an individual match play against the course played in 4 flights. The winners reported by co-chairmen Bill Gideon and Elmer Hampel were:

First Flight-1st place, Ruben Ramos; 2nd place, Ed Stepnoski; 3rd place, Owen Koontz; 4th place John Hawkins; and closest-to-the-pin, Bill Gideon.

Second Flight-1st place, Norm Martin; 2nd place, Jim Silver; 3rd place, Steve Hing; 4th place, Howard Matthews; and closest-to-pin, Russ Cravens.

Third Flight-1st place, Don Davis; 2nd place, Howard Garrison; 3rd place, Clark White; 4th place, Tim Bridges; and closest-to-pin, Jack Shapira.

Fourth Flight-1st place, Bill Sutton; 2nd place, Edie Watson; 3rd place, Yvonne Sheaffer; 4th place, Fred Wirth; and closest-to-pin, Phyllis Strawbridge.

The next regular tournament will be at Sunol (Palm).

"Thank You"

"My wife and I would like to express our appreciation to all of you who attended my retirement luncheon. We also wish to thank you for the wonderful gift and luncheon.
M. H. Ross"

Policy On Outside Employment

Ames employees are reminded of the NASA policy and procedures regarding outside employment as approved by the Civil Service Commission.

"Outside Employment" means any work, service, or other outside activity performed by an employee other than in the performance of his or her official duties. It includes such activities as writing and editing, publishing, teaching, lecturing, consulting services, self-employment, and other work or services, with or without compensation.

Details of this regulation may be found in the Federal Personnel Manual, Chapter 735-2-3, and in NHB 1900.1A, Standards of Conduct for NASA Employees issued October 1967.

The Ames instructions require ARC Form 214, "Request for Approval of Outside Employment," must be filed with the Personnel Office. For further information call Mrs. Marquardt, ext. 5608, Bldg. 241, Room 116.

JOGGERNEWS

New Joggernews officers are Jerry Barrack, president; Bruce Castle, vice-president; and Ellis Whiting, secretary-treasurer. Paul Sebesta is still racing chairman.

Our bi-weekly Wednesday noon race June 7 was a two mile handicap relay race with two runners on each team. Jerry Barrack and Fred Lemos finished 20 seconds before the next team. Fred has improved each week, thereby doing very well in these races, in which the handicap is based on past performance. We wonder how long he can keep it up. David Cooper and Donn Kirk had the best actual time, eleven minutes and 37 seconds.

Sunday, June 10, Vito D'Aloia and Jim Woodruff ran the 10 mile Woodminster race over the steep, but beautiful, hills above Oakland. The handicap grouping, based on age, let Vito start 5 minutes ahead of Jim. Jim tried to catch up, but Vito pulled ahead and finished seven minutes ahead of Jim.

Anyone interested in our activities call Jerry Barrack, 5423.

For Sale-Exterior sliding door panels, frames, and screens; in original packing, never installed, for 5 1/2" jamb; anodized medium bronze; Arcadia 701, 1 pr. 10'-0" x 8'-0" DX, 1 pr. 8'-0" x 8'-0" XO; half price, 368-7153, Carl James.

For Rent-Furnished, 2-bedroom house; fenced yard; Palo Alto near Oregon Expressway. \$275/mo, Call 854-4074.

WANT ADS

Advertising of articles or services in this publication is restricted to employees of Ames Research Center and on-site employees of support contractors. Articles or services advertised herein must be offered for sale or rental as advertised, without regard to race, color, religion, sex or national origin.

The Astrogram's ad section is provided as a personal, non-commercial service to Ames employees. Advertiser must be identified by name, extension and organization. The name may be left out of the ad but is needed for records. Ads must be submitted in writing to The Astrogram, N 241-4 by Thursday, a week before publication. The advertiser's home telephone number must be provided as a point of contact except in carpool notices.

AUTOMOBILES

For Sale-1971 Pinto with radio, heater and automatic, \$1795. 867-1139.

For Sale-1966 Jag, XKE 2 plus 2, Rebuilt, 4-speed, clutch, Pirellis, am-fm, wire wheels, excellent cond. \$2395, 248-2919.

For Sale-1970 Toyota, Corolla, 2-dr., clean, good tires, excellent running condition, low mileage. \$950, or best offer, 738-3098.

For Sale-1971 Datsun 510, 2-door stick shift, Sharp, Bob Pierce, 225-5207.

HOUSING

For Rent-Cabin, Lake Tahoe, south shore. \$90 per week. Call E.A. Harris, 948-6200.

For Rent-Vacation cottage - Sunnyside area of Tahoe 2-bedroom, walk to beach or marina. \$95 per week. \$45 per weekend. Call 964-9848.

For Sale-\$500 below appraisal! Immac., 3-bdrm., 2-bath, A/EK, fam. rm., cpts., drps., fin. gar., cov. patio, D'boy pool. Assumable 5 3/4% FHA loan. \$28,500. Open H-6, 851 Loyaltown Dr., Campbell. 379-6167.

For Sale-Beautiful view lots off Highway 88. Panoramic 400 ft. elevation with roads, water, telephone and power. Near ski areas and only one hour to Lake Tahoe. Terms 8%, 1.16 acres \$7,600, 1.92 acres, \$8,950. Call after 5 p.m. 296-8742.

MISCELLANEOUS

Ride Wanted-From Santa Clara St. and 4th, San Jose, to Ames. Call Gil Telles, x 6241.

Wanted-To join a car pool with someone from the Milpitas area. Contact Mrs. Hoffman at ext. 5645.

Ride Group-From Embarcadero Rd. area in Palo Alto needs more members. Call Susan Post, x. 5663, or 328-8537.

Ride Needed-Summer student needs ride, Woodside Plaza area, Redwood City. Ext. 5334, or 366-0075.

Lost-Small gold pin in shape of orchid with small pearl. In vicinity of Life Science Lib., Cafeteria and Main Lib. Sentimental value, x. 5157.

Found-Kodak Instamatic camera under drivers' seat of Government station wagon prior to May 24. Call ext. 5502 and describe to claim.

Lost-Would the person who took the HP-35 Pocket Calculator belonging to the Electronic Instrument Development Br. from room 119 of the Res. Fac. & Inst. Bldg. on Thursday, June 5, please return it.

For Sale-Dobie Pups, AKC, Vom Ahrtal and Stoneybrook lines. Deep forechest, muscular rear, exc. conformation for show. 793-6502, eves.

For Sale-Fluffy Friskey Felines for sale FREE from a Flighly Flandering Female Feline. Please call 252-3370.

Free-Dog, Basset, mix, male, has shots, call 293-7201.

For Sale-Afghan Hound Puppy, AKC, registered, male, show quality, last of litter, reasonable. 739-6054.

For Sale-Honda 1971 trail 90, new condition with only 340 miles, \$300. 259-4618 evenings.

For Sale-Honda 50cc, low mileage, runs well, best offer. Call 969-2796, after 5:30 p.m.

For Sale-Slate Bed Pool Table and accessories, \$600 867-1139.

For Sale-Membership open in Cessna 140 club. \$300 refundable. \$5 per mo. and \$5 per hr. wk. Call 736-8550 or 253-8539.

For Sale-Handcrafted goods and creative goods, wanted, bought and consigned. Call Rich or Dan, home 293-4106.

For Sale-Shure V 15 Type II Super Track cartridge with two elliptical styli. Six months old \$40, or best offer. 738-2948.